

**Appl. No.** : 09/890,366  
**Filed** : July 26, 2001

### **REMARKS**

In response to the final Office Action mailed November 27, 2006, Applicants respectfully request the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following remarks.

#### ***Summary of the Office Action***

In the November 27, 2006 final Office Action, Examiner rejected Claims 22-23 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Further, the Examiner rejected Claims 1, 10-14, and 17-23 under 35 U.S.C. § 103(a) as being unpatentable over Kamijo (U.S. Patent No. 4,556,416, herein referred to as Kamijo).

#### ***Summary of the Amendment***

Upon entry of the present Amendment, Applicants will have amended Claims 1, 12, 21, and 22. Applicants will have also added Claims 24-31. Therefore, Claims 1, 10-14, and 17-31 currently remain pending in the application. Please note that in the amendments to the specification and claims, deletions are indicated by strikethrough (e.g. ~~deletion~~) and additions to the claims are underlined (e.g. addition).

#### ***Traversal of Rejection under 35 U.S.C. § 112, Second Paragraph***

Applicants respectfully traverse the rejection of Claims 22-23 under Section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter.

With respect to Claim 22, the Examiner indicated that there is no antecedent basis for “the combined passes,” and stated that it is unclear if it requires the passes are combined, or if it means “if they are combined, then the combined passes. . . .” Applicants have now amended Claim 22 to clarify that a laser is directed “for a first pass through the flame at a first distance from said burner” and then the laser beam is redirected “for a second pass through the flame at a second distance from said burner,” and that the power level of the laser beam is sufficient for the aggregates to coalesce and convert into smaller fine particles “as a result of the first and second

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passes of the laser beam through the flame.” This amendment finds support in the disclosure on page 9, lines 6-20, and in Figures 6A-6C. Applicants respectfully submit that this amendment overcomes the rejection of the Examiner with respect to Claims 22 and 23.

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of these claims under Section 112, second paragraph.

***Traversal of Rejection under 35 U.S.C. § 103(a)***

Applicants respectfully traverse the rejection of Claims 1, 10-14 and 17-23 under Section 103(a) as being unpatentable over Kamijo. The Examiner referred to past Office Actions in submitting this rejection. Applicants hereby respectfully traverse this rejection and submit that as amended, Claims 1, 10-14 and 17-23 are patentable over Kamijo.

Applicants note that as amended, independent Claims 1, 12, 21, and 22 each now recite, *inter alia*, a method of manufacturing fine particles wherein a laser beam is directed at aggregates and gas with “said laser beam having a wavelength selected so as to be generally coincident with said aggregates but not with said gas such that said laser beam is generally absorbed by said aggregates but not by said gas.” In view of the Examiner’s past arguments in support of his prior rejections under Section 103, Applicants submit that Kamijo fails to teach at least these features of the claims.

In particular, Applicants note that Kamijo teaches a process wherein a reaction gas is excited and heated by a laser to produce a fine powder. *See* Kamijo, col. 1, lines 35-43. Kamijo specifically indicates that “a reaction gas containing a gas of volatile metal compound and/or evaporated metal as starting materials are introduced into a reaction chamber which is kept in a discharged (or ionized) state. The ionized **gas is further excited and heated** by laser beams to efficiently produce a fine powder of metal or ceramics.” *Id.* (emphasis added). Kamijo states that the **reaction gas(es)** are thus used as starting materials. *Id.* at col. 1, lines 44-46. Thus, the laser beams are used to excited and heat the gas—in other words, the gas absorbs the laser beams. *See id.* at col. 2, lines 28-44.

In contrast, as recited in Claims 1, 12, 21, and 22, the laser beam is selected with “said laser beam having a wavelength selected so as to be generally coincident with said aggregates but

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not with said gas such that said laser beam is generally absorbed by said aggregates but not by said gas.” Applicants teach this principle in the application by indicating that:

At a position of  $h_p = 11$  mm, laser absorption by gas was relatively small and a relatively small increase in the gas temperature, that is, about  $40^{\circ}\text{C}$ , was shown, which was because the concentration of injected nitrogen was high and hydrogen was not sufficiently diffused at the center of the flame. The infrared absorption bands of  $\text{SiO}_2$  are  $455\text{ cm}^{-1}$ ,  $1090\text{ cm}^{-1}$  and  $800\text{ cm}^{-1}$  (see R. A. Nyquist et al., *Infrared Spectra of inorganic compounds*, 4, Academic Press, Inc., 1997.). Also, the frequency of the  $\text{CO}_2$  laser beam is  $934\text{ cm}^{-1}$ , at which frequency coincidence occurs more easily in particles than the case of the gas. Further, the size of a particle is at least 100 times greater than the size of a gas molecule. Thus, the actual laser absorption of particles is much larger than that of the gas. Laser beam incidence into particles results in a sharp increase in the particle temperature compared to in the gas temperature.

PCT/KR00/00049 Application, page 11, line 25 to page 12, line 13.

This process is not taught or suggested in Kamijo. Instead, as noted above, Kamijo teaches that the “**gas is further excited and heated** by laser beams to efficiently produce a fine powder of metal or ceramics.” See Kamijo, col. 1, lines 35-43 (emphasis added). Thus, the gas is a key starting material used in the formation of the powder produced in the Kamijo process, whereas Claims 1, 12, 21, and 22 recite a process wherein the laser beam has “a wavelength selected so as to be generally coincident with said aggregates but not with said gas such that said laser beam is generally absorbed by said aggregates but not by said gas”

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of Claims 1, 12, 21, and 22 under Section 103(a). Further, Applicants also respectfully request that the Examiner withdraw the rejections of Claims 10-11, 13-14, 17-20, and 23 for at least the reason that these claims depend from allowable independent claims.

#### *New Claims 24-31*

Applicants hereby submit new Claims 24-31 for consideration. These claims depend from independent Claims 1, 12, 21, and 22, and should be allowable for at least the reason that this claim depends from allowable base claims. These claims draw support from the specification on page 12, and therefore, Applicants submit that these claims fully comply with Section 112. Applicants therefore respectfully request that the Examiner indicate allowance of these claims.

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### ***Conclusion***

Applicants respectfully submit that the above rejections have been overcome and that the present application is now in condition for allowance. Therefore, Applicants respectfully request that the Examiner indicate allowance of Claims 1, 10-14, and 17-31. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

Applicants respectfully submit that the claims are in condition for allowance in view of the above remarks. Any remarks in support of patentability of one claim, however, should not be imputed to any other claim, even if similar terminology is used. Additionally, any remarks referring to only a portion of a claim should not be understood to base patentability on that portion; rather, patentability must rest on each claim taken as a whole. Applicants respectfully traverse each of the Examiner's rejections and each of the Examiner's assertions regarding what the prior art shows or teaches, even if not expressly discussed herein. Although amendments have been made, no acquiescence or estoppel is or should be implied thereby. Rather, the amendments are made only to expedite prosecution of the present application, and without prejudice to presentation or assertion, in the future, of claims on the subject matter affected thereby. Applicants also have not presented arguments concerning whether the applied references can be properly combined in view of, among other things, the clearly missing elements noted above, and Applicants reserve the right to later contest whether a proper motivation and suggestion exists to combine these references.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants' attorney in order to resolve such issue promptly.

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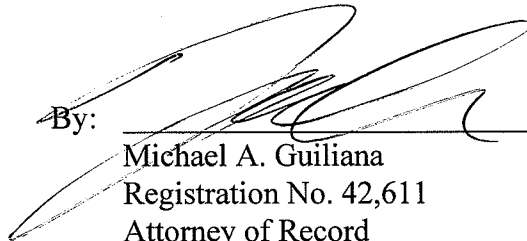
Respectfully submitted,

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Dated: \_\_\_\_\_

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